REMARKS

Reconsideration and further examination is respectfully requested.

Amendments to the Drawings

Several amendments have been made to Figure 2, as shown on the attached sheet. Applicants have amended Figure 2 to replace element number 114 with element number 116 for the multiplexer coupled to amplifier 118. In addition, Applicants have amended Figure 2 to show a control line extending from the amplifier in front of Dispersion Measurement components 135 and extending to the select input of WDD 106. Support for this connection is found at page 12 lines 29-30. An indication of acceptance of these modifications is respectfully requested.

Objections to the Drawings

The drawings were objected to for various reasons, including improper duplicate use of reference numeral 114 and non-inclusion of elements described in the specification. Applicants have amended Figure 2 as shown in the attached sheet to properly designate the multiplexer as element number '116'. Entry of this figure is respectfully requested. In addition, Applicants have cancelled portions of the specification which refer to elements not illustrated in the figures (see cancellation to passages on pages 6 and 12 of the specification). Accordingly, for at least this reason it is submitted that the objections to the drawings have been overcome and should be withdrawn.

Objections to the specification

The disclosure was objected to for various informalities. Applicants have endeavored to overcome each of these informalities through amendment of the specification, and thus submit that the rejection has been overcome and should be withdrawn. The Examiner is thanked for the careful review of the specification.

Objections to the claims

Claim 1 was objected to for various informalities. Applicant has amended claim 1 to recite 'optical signal', and thus submit that the objection has been overcome and should be withdrawn.

Rejections of the claims

Rejections under 35 U.S.C. §112

Claims 4-9 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Claims 8 and 9 were rejected under 35 U.S.C. §112, second paragraph, for improper antecedent basis. Claims 4-9 have been cancelled, and thus it is submitted that the rejection is overcome.

Rejections under 35 U.S.C. §102(e)

Claims 13, 16 and 17 were rejected under 35 U.S.C. §102(e) as being anticipated by Fukashiro et al (U.S. Patent No. 6,362,905).

Fukashiro:

Fukashiro describes an optical crossconnect including one terminal connected to a transmission path from one optical transmission terminal station and another terminal connected to a transmission path from another optical transmission terminal station, a first optical signal switch having 'M1' ports and 'N1' ports, though which the optical signals can pass, a second optical signal switch having "M2" ports and "N2" ports, through with the optical signal can pass, and "L" optical signal repeaters. (Fukashiro, Abstract). Fukashiro further describes, at col. 6, lines 14 – 26:

"Normally, the optical switch unit 10-1 connects "n" pieces of optical signals originated from the optical transmitter, which are entered from the optical input units Ts1 to Tsn, to the optical output units Ws1 to Wsn, respectively. To the contrary, *when the controller 14 detects a failure of an optical fiber connected to, for example, the optical output unit Ws1, the optical switch unit 10-1 switches the optical signal supplied from the optical input unit Ts1 to the optical switch unit 10-5 in response to a control signal supplied from the controller 14. ..*".

Thus, Fukashiro describes merely protection switching, but neither describes nor suggests the limitations of claim 13, which as amended now recites: "... A photonic node for multi-vendor and multi-carrier interworking comprising means for reducing a variance between inputs of an optical signal received at the photonic node by *applying bulk compensation to all channels of the optical signal* ... means for performing performance monitoring on each one of a plurality of channels of the optical signal; *and means for performing impairment compensation on each one of the plurality of channels of the optical signal responsive to the performance monitoring* of each channel coupled thereto..."

Accordingly, for at least the reason that Fukashiro fails to describe or suggest both "applying bulk compensation to all channels" and "means for performing impairment compensation on each one of the plurality of channels ... responsive to the performance

monitoring of each channel..." claim 13 is patentably distinct over Fukashiro, and the rejection should be withdrawn.

Dependent claims 16 and 17 serve to further limit claim 13 and are therefore allowable for at least the reasons put forth with regard to claim 13.

Rejections under 35 U.S.C. §103

Claims 103, 11-12 and 14-15:

Claims 1-3, 11-12 and 14-15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Tsushima et al (U.S. Pat. 6,424,445) in view of Fukashiro (US Pat. 6,362,905). Claim 10 was rejected under 35 U.S.C. §103 as being anticipated over Tsushima et al in view of Fukashiro and further in view of Harley et al (U.S. Patent No. 6,323,978).

Tsushima:

Tsushima describes an optical transmission apparatus, an optical repeater using the optical transmission apparatus, and an optical cross-connect equipment for controlling switches depending on supervisory information, comprising: a doped fiber for amplifying an optical signal of wavelength .lambda.d; a wavelength multiplexer for outputting a pumping light to the doped fiber; a wavelength multiplexer for multiplexing an amplified optical signal and a supervisory optical signal to as to output it to an optical fiber at downstream side; a pumping and supervisory light source; an optical coupler for distributing the light from the light source at a ratio of N:1 to the wavelength multiplexers; and a driver for controlling the light source by adding the supervisory information and a direct current signal. (Tsushima, Abstract).

Harley:

Harley describes a method and apparatus for embedding control information in an optical signal transporting optical data, consisting of encoding the control information as a control signal having an amplitude proportional to a controllable modulation depth. The optical signal is then optically modulated in accordance with the amplitude of the control signal. The control signal is subsequently detected and the control information is decoded. A major feature of the invention lies in determining a level of similarity between the encoded and decoded control information and varying the modulation depth according to this level of similarity. Hence, the modulation depth yielding a given bit-error rate (BER) or signal-to-noise ration (SNR) can be minimized, in order to reduce the degradation of the optical channel data. (Harley, Abstract).

Thus, Tsushima describes an optical cross connect, and Harley describes one method of determining degradation of optical channel data. However, neither Fukashiro, Tsushima or Harley, either alone or in combination, describe or suggest the limitations of the claimed invention.

Claim 1 recites "...A photonic network node comprising photonic switch fabric for forwarding an optical signal comprising a plurality of channels ... means for monitoring the optical signal before and after the photonic switch fabric... means for protecting channels of the optical signal responsive to the monitoring means ... *means for reducing a variance between inputs to the photonic network node by applying a bulk compensation to all channels of the optical signal* ... means for demultiplexing the optical signal into the plurality of channels ... *means for compensating for individual channel impairment responsive to the monitoring means*; and means for multiplexing a plurality of channels into an output optical signal..." No such system is found in the combination of references cited by the Examiner.

Accordingly for at least this reason, claim 1 is patentably distinct over Tsushima in view of Fukashiro. Dependent claims 2-3 and 11-12 serve to further limit claim 1 and are allowable with claim 1.

With regard to claim 10, applicant notes that the combination of Hayes, Tsushima and Fukashiro neither describe nor suggest the limitation of the allowable parent claim. For at least this reason, claim 10 is patentably distinct over the references.

Dependent claims 14 and 15 serve to further limit claim 13,and are patentably distinct over the cited references for at least the reason that the combination of Fukashiro and Tsushima neither describe nor suggest the limitations of the parent claim 13 and therefore any dependent claims.

Claims 18 and 19:

Claims 18 was rejected under 35 U.S.C. §103 as being anticipated by Fukashiro in view of Essiambre (US Patent 6583907). Claim 19 is rejected as being anticipated by Fuksahiro in view of Chaudhuri. (6,587,235).

The Examiner relies on Essiambre as teaching output channel dispersion compensation. However, Applicants note that claim 18 serves to further limit claim 13, which recites "...*means for reducing a variance between inputs of an optical signal received at the photonic node by applying bulk compensation to all channels* of the optical signal means for performing performance monitoring on each one of a plurality of channels of the optical signal; and *means for performing impairment compensation on each one of the plurality of channels of the optical signal responsive to the performance monitoring of each channel coupled thereto...*" Claim 18 further limits claim 13 by adding "...wherein the means for monitoring includes photonic node

output channel dispersion compensation responsive thereto..." No such structure is found in the combination of Fukashiro and Essiambre, and therefore the rejection should be withdrawn.

With regard to claim 19, the Examiner relies on Chaudhuri as teaching interfaces with electric signals using electrical-to-optical conversion. However, Applicants note that claim 19 serves to further limit claim 13, which recites "...*means for reducing a variance between inputs of an optical signal received at the photonic node by applying bulk compensation to all channels* of the optical signal means for performing performance monitoring on each one of a plurality of channels of the optical signal; and *means for performing impairment compensation on each one of the plurality of channels of the optical signal responsive to the performance monitoring of each channel coupled thereto*..." Claim 19 further limits claim 13 by adding "...means for interfacing with electrical signaling network nodes...." No such structure is found in the combination of Fukashiro and Chaudhuri, and therefore the rejection should be withdrawn.

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Lindsay G. McGuinness, Applicants' Attorney at 978-264-6664 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

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Date

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